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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/812,526

03/29/2004

Kong Weng Lee

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05/04/2006

AVAGO TECHNOLOGIES, LTD.

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EXAMINER

MAKIYA, DAVID J

ART UNIT

PAPER NUMBER

2875

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,526

Applicant(s)

LEE ET AL.

Examiner

David J. Makiya

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 8-12 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-12 and 15-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 8, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins, III et al. (US 2005/0184387) in view of Haitz (US Patent 3,780,357).

With respect to claim 1, Collins, III et al. teaches a light emitting diode package comprising a ceramic substrate (40, 64) for mounting a light emitting diode 60, the substrate defining a cavity with a ceramic sidewall, wherein the cavity is shaped to focus light in a predetermined direction, and a metallic coating 64 on a portion of the ceramic substrate for reflecting light in a predetermined direction (Paragraph 34). However, Collins, III et al. fails to teach the substrate defining a cavity with a vertical sidewall. Haitz teaches a light emitting diode package (Figure 4) with a ceramic substrate (16, 18; Column 4, Lines 58-60) for mounting a light emitting diode 12, the substrate defining a cavity with a vertical sidewall 21 shaped to focus light in a predetermined direction. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Collins, III et al. with the teachings of Haitz because a cavity with vertical sidewalls would be simple and inexpensive to manufacture.

With respect to claim 8, Collins, III et al. teaches a method for manufacture of a light emitting diode package comprising forming a ceramic substrate (40, 64) for mounting a light emitting diode 60, the substrate defining a cavity with a ceramic sidewall, and the cavity having

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a bottom and a top (Figure 5), wherein the cavity is shaped to focus light in a predetermined direction, coating a portion 64 of the ceramic cavity with a light reflective material (Paragraph 34), positioning a light emitting diode on the substrate, and depositing an optically transparent material in the cavity to protect the light emitting diode. However, Collins, III et al. fails to teach the substrate defining a cavity with a vertical sidewall. Haitz teaches a light emitting diode package (Figure 4) with a ceramic substrate (16, 18; Column 4, Lines 58-60) for mounting a light emitting diode 12, the substrate defining a cavity with a vertical sidewall 21 shaped to focus light in a predetermined direction. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Collins, III et al. with the teachings of Haitz because a cavity with vertical sidewalls would be simple and inexpensive to manufacture.

With respect to claims 15-17, Collins, III et al. teaches the method wherein positioning the light emitting diode comprises determining a location between the bottom and the top of the cavity to locate the light emitting diode. It is an inherent characteristic of a light-emitting device to have a viewing angle. Based on the structure of the reference light emitting diode package, positioning the light emitting diode within the cavity will result in light emitting only within an angle created by the cavity. It is therefore inherent in the structure of the device that positioning the light emitting diode within the cavity will achieve a predetermined viewing angle of the light emitting diode while moving the light emitting diode closer to the bottom of the cavity will reduce the viewing angle and moving it closer to the top of the cavity will increase the viewing angle (Refer to Paragraph 34).

With respect to claim 18, Collins, III et al. teaches the method wherein depositing the optically transparent material in the cavity to protect to light emitting diode comprises forming a domed layer 66 of the optically transparent material over the light emitting diode (Paragraph 34).

Claims 2-5 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins, III et al. in view of Ishinaga (US Patent 6,355,946).

With respect to claims 2-5, Collins, III et al. teaches the light emitting diode package as described in claim 1, but fails to explicitly state the shape of the cavity. Ishinaga teaches the use of rectangular (Figure 8), trapezoidal (Figure 7), oval (Figure 2), and circular (Figure 12) shaped cavities. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Collins, III et al. package with the teachings of Ishinaga because different shapes would provide different illumination patterns and would increase the aesthetic appearance based on the application of the device.

With respect to claims 9-12, Collins, III et al. teaches the method for manufacture of a light emitting diode package as described in claim 8, but fails to explicitly state the shape of the cavity. Ishinaga teaches the use of rectangular (Figure 8), trapezoidal (Figure 7), oval (Figure 2), and circular (Figure 12) shaped cavities. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Collins, III et al. method with the teachings of Ishinaga because different shapes would provide different illumination patterns and would increase the aesthetic appearance based on the application of the device.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Collins, III et al. and Haitz as described in claim 8 and further in view of Abe (US Patent 5,177,593).

With respect to claim 19, Collins, III et al. teaches the method as described above, but fails to teach the optically transparent material forming a concaved layer. Abe teaches the method of depositing an optically transparent material to protect a light emitting diode comprises forming a concaved layer of the optically transparent material over the light emitting diode. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify

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the Collins, III et al. method with the teachings of Abe because having a concaved layer over the LED provides the ability to focus the emitted light in a more concentrated area. In response to applicant's argument that there is no reason to combine because Abe does not suggest the use of a ceramic sidewall, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, the primary reference teaches all of the limitations of the independent claim and the secondary reference teaches the missing limitation of the secondary claim. In addition, the examiner provides motivation for the combination, therefore providing a case of prima facie evidence.

Conclusion

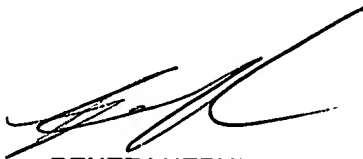
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Makiya whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday-Friday 7:30am - 4:00pm (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Renee Luebke can be reached on (571) 272-2009. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJM 04/27/2006

A handwritten signature in black ink, appearing to read 'RENEE LUEBKE', with a long, sweeping horizontal stroke extending to the right.

RENEE LUEBKE
PRIMARY EXAMINER